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area into the sound heart wood, excavating it with longitudinal galleries until only a thin shell of sound wood is left. From the main body of occupied nest they cut lateral openings to the outside, called "windows" by the woodsmen. The topmost window marks approximately the upper limit of damage. The writer makes practical suggestions leading to the conservation of the wood in cutting the poles with respect to this condition and at the same time sufficiently to protect the buyers.

DROSOPHILA IN BOTTLED CERTIFIED MILK

Riley (Report State Entomol. Minn. 17, 1918) reports frequent occurrence of the puparium of a species of Drosophila on the inside of bottles of certified milk. The occurrence of these objects has been recognized by many of the distributing companies, whose employees referred to them as "hay-seeds." It was concluded that the eggs are laid in unwashed bottles to which the flies are attracted by the souring milk. The larvae are so nearly transparent as to escape notice, and adhere so tightly that they are not removed by washing. They are of course killed and rendered innocuous by the cleansing treatment in any properly managed dairy, where the bottles are treated by a hot, almost boiling, caustic solution. The inability of the author to rear any flies is reasonable evidence of the soundness of this conclusion. Such episodes certainly make apparent the necessity of enforcement of regulation for cleansing of milk bottles, as soon as emptied, by consumers.

TROPHYLLAXES: A NUTRITIVE EXCHANGE AMONG ANTS

Wheeler (Proc. Amer. Phil. Soc. 1918, p. 293) in a most suggestive paper offers a suggestion as to one of the possible elements underlying the social life of ants. In certain Ponerine ants the workers turn the larvae on their backs while they are being fed. Fragments of insects are placed on the concave ventral surface. This stimulates the larvae to secrete and discharge a fluid, comprizing blood serum, other nutrient matters and a proteolytic enzyme. The secretion may exude thru the pores of the skin or from special glands. There may be special tubercles or other outgrowths. These materials are licked off by the nurses. This exchange of foods between larvae and workers suggests the relationship known to exist between some species of ants and plant lice. Such a symbiotic relation might well modify community life.

NUTRITION OF INSECTS IN RELATION TO MICROÖRGANISMS

Many insects live on plant food which is rich in carbohydrates but relatively low in protein. Because of the one fact insects may show great activity while, owing to the lack of protein, their growth may be both limited and slow. Some forms have a long life cycle altho ingesting great quantities of the substratum. This argues low metabolic rate in spite of large ingestion. On the other hand, many insects using fermenting vegetable matter with very low protein content have a very short and rapid growth period. This suggests an unapparent protein constituent. Baumberger (Jour. Exp. Zool., April, 1919) reports a study designed to discover the source of the protein supply of such insects. Drosophila in fermenting fruit, sarcophagous flies, coprophagous flies, fungus gnats, and other insects were used. The experiments on the Drosophila were especially thoro. By crucial experiments the author shows that the insect, while able to live on sterilized fruit alone, only has its normal rapid growth rate when this fruit diet is accompanied by microörganisms, particularly yeast. The yeast is a more adequate food than the fruit because of its higher protein content. Similarly the other insects, mites, and the like studied were shown to feed on microörganisms, thus generally supplementing their diet by the power of the fungi to extract, absorb, and synthesize the many non-protein compounds.

The author gives grounds for believing that this dependence of insects upon fungi is wide-spread. This is another measure of the great adaptability of insects in respect to available foods. Three modes of availing themselves of these high-class fungous foods are mentioned: (1) Ingestion of the microörganisms with the substratum, as in larvae of Drosophila, Musca, etc.; (2) Feeding directly on the microörganisms, as mites, crickets, many adult Diptera; (3) Preparation of an organic medium for the growth of microörganisms, as leaf-cutting ants, termites. Attention is called to the fact that animals other than insects go to the same source for food—as Protozoa, probably nematodes, and possibly earth worms.